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COMPENSATION FOR TYPHOID FEVER.

WISCONSIN SUPREME COURT DECIDES THAT TYPHOID FEVER MAY BE WITHIN THE TERMS OF THE WISCONSIN WORKMEN'S COMPENSATION LAW.

The opinion of Mr. Justice Siebecker, of the Supreme Court of Wisconsin, and the dissenting opinion of Mr. Justice Barnes (pp. 329 and 331 of this issue of the Public Health Reports) are good examples of the arguments on the question whether diseases caused by conditions arising in the course of employment are the result of "accidents" as that term is used in workmen's compensation laws.

The death of an employee was caused by typhoid fever which was contracted by drinking impure water furnished by the employer. The court decided that the death was the result of an accident, and that the employer was liable under the Wisconsin law.

MORBIDITY REGISTRATION IN THE UNITED STATES.

A SUGGESTION AS TO THE FORMATION OF A PROVISIONAL REGISTRATION AREA FOR MORBIDITY.

By JOHN S. FULTON, Secretary, State Department of Health, Maryland, and JOHN S. FULTON, Jr.,
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Fifty years ago, a country having a reliable population counts and good mortality registration was well started in vital statistics. In these days, to have statistics of births and deaths is to be up with the procession. But to be somewhere in the advance it is necessary to have also good morbidity registration. All of the States in the registration area for deaths have notification laws for the more important infectious diseases. These laws, however, are not well operated in all the States. The laws differ in their character as much as in their operation. The United States Public Health Service has framed what is known as a "Model bill" for the notification of communicable diseases, and a standard notification card has been adopted, with the approval of the conference of State and territorial boards of health. This card and the model bill name thirty-odd notifiable diseases. The influence of the bill and the card, on the progress of registration, has

been considerable, but much recent improvement in notification is also due to the fact that the United States Public Health Service has appointed collaborating epidemiologists in localities where the cooperation of a Federal health officer with State and local departments of health could be of material advantage in improving the morbidity registration and in increasing the resulting information of the occurrence and prevalence of disease, available to the Federal, State, and local health departments. In some States the collaborating epidemiologists have furnished the practicing physicians with notification cards, which the physicians use to report to the collaborating epidemiologists their cases of preventable diseases.

In this process the town or county health officer may be wholly ignored or he may be wholly dependent upon the collaborating epidemiologist for official information concerning preventable sickness in his own bailiwick. Such an arrangement is in conflict with sound theory and sound practice in so far as the local health officers are concerned, but where no theory or practice has existed no harm is done, and a surprising amount of information has been obtained in this manner from territory in which there was previously no means of information nor any appreciable desire to be informed.

For many years the United States Public Health Service has been publishing information about the prevalence of the more important communicable diseases in the American States and in foreign countries. Within the past 8 or 10 years this work has been greatly improved and expanded. During the three years ended with 1914 the service published, in its weekly Public Health Reports, the accounts of current morbidity furnished by 31 States. Each year the Service has tabulated these morbidity figures, by States and by cities of 100,000 or greater population, with case rates and fatality rates, for 18 communicable diseases.

With this experience of three consecutive years before us, we contemplate, for the first time, the possibility of defining a registration area for morbidity. In looking for rational criteria the first thing that strikes us is the circumstance that the list of notifiable diseases varies from State to State. Next it is observed that some States are quite successful with the notification of three or four diseases, while failing unequivocally in the registration of other diseases. To distinguish fairly among the States we should take that experience which is common to all the States; that is to say, we should take the notifiable diseases which occur most regularly in all the States in sufficient number to cause significant mortality every year. Four acute infections satisfy this condition—typhoid fever, scarlet fever, measles, and diphtheria.

Examining the experience of 32 States and the District of Columbia for 1912, 1913, and 1914, we find that the indicated fatality rates

of these diseases has declined from year to year, showing that notification is more effective each year. The sickness from typhoid, scarlet fever, measles, and diphtheria recorded in the three years amounted to 1,171,247 cases, and the fatality rate was 5.95 per cent. If we divide the States into two groups, one above and the other below this mark (5.95), we shall distinguish the group of the States best entitled at this time to be admitted into a provisional registration area for morbidity. They would be 16 in number, and by name as follows: Connecticut, District of Columbia, Idaho, Montana, Kansas, Maryland, Massachusetts, Mississippi, Nevada, New York, Ohio, Oregon, South Dakota, Utah, Vermont, and Washington. Four of the States named are not now included in the registration area for deaths. These are Idaho, Nevada, Mississippi, and South Dakota. States which can not determine a general mortality rate can certainly not be depended on for the fatality rate of four causes of death. These States should not be included in a registration area for morbidity.

Mississippi's method of securing morbidity reports would also bar this State from a registration area such as that contemplated. In Mississippi physicians are required to report cases of cholera, diphtheria, epidemic cerebrospinal meningitis, poliomyelitis, smallpox, typhoid fever, and yellow fever within 24 hours to the county health officer, and whenever there occurs within a county an epidemic of any of these diseases the county health officer is required to report within five days to the secretary of the State board of health the number of cases occurring. Of the other notifiable diseases, physicians are required on the first day of each month to report the number of cases of each disease treated or examined by them during the preceding calendar month. Mississippi has been getting in this way reports of exceptionally large numbers of cases of malaria, measles, and pellagra, and the highest reported case rates of any State for tuberculosis and typhoid fever. Whether these high case rates are due in any way to fictitious or duplicated reports by physicians, or to the fact that with the method used for collecting these reports Mississippi is getting unusually complete records of cases, could be determined only by a field investigation.

The situation of several well-established registration States with respect to morbidity is quite disappointing. Maine and New Hampshire are not included, because they do not furnish morbidity returns to the United States Public Health Service.

In four of the older registration States—Rhode Island, New Jersey, Pennsylvania, and Indiana—the notification of infectious diseases is shown to be quite defective by fatality rates well in excess of the average rate for 31 States. Six younger States in the mortality registration area—California, Colorado, Minnesota, Wisconsin, Kentucky, and Virginia—show large defect in the registration of sickness.

Considering the group of 15 superior States, it is interesting to note that Utah, a very young registration State, is unequivocally best of all in the registration of sickness. Within four or five years Utah has brought the notification of infectious diseases to a better status than Massachusetts, the oldest registration State, has been able to achieve in half a century. Some part, not all, of this superiority of Utah is probably due to a provision of the law which punishes a delinquent physician by revoking his license to practice.

Morbidity registration can never be complete. Only that part of current morbidity which declares itself to the diagnostic sense of physicians can be registered. It may be assumed that three-fourths or four-fifths of the sickness from notifiable diseases comes under medical observation in these days and that the proportion will increase. This part of current morbidity can be registered within a few days of its inception, and will be so registered from the moment that health authorities begin to exact penalties for failure to notify.

The three tables following show the results of registration during the three years 1912-1914.

Table 1 shows the morbidity of cities from four causes for each of the three years. It will be seen that the morbidity registration of cities is better than that of the States in which they are situated. Such is the general rule in the registration of mortality, and we can derive from it a caution concerning morbidity registration. If the admission of States to the registration area for deaths were conditioned on evidence that the mortality records for unincorporated territory exceed 90 per cent of deaths occurring, some States would be excluded. The mortality registration of cities is required to give some States a total registration better than 90 per cent.

That mortality registration is better in cities is only a general rule. In exceptional cases one finds that births and sickness are better registered in smaller towns and country districts than in large cities. This emphasizes the need of caution with respect to divisions of the registration districts, and it shows that a fatality test to be effective should be revised every two or three years.

Table 2 shows the experience of all States for each of the three years.

Table 3 shows the experience of each of the States, with each of the four diseases for all the time (three years).

It is seen that New Jersey does not register measles. The probability is that if measles were as well registered as the other three diseases, the fatality figure would have been under 5.95. It also suggests that there might be some advantage in using a single disease—typhoid fever—as a general test of efficiency of registration.

TABLE 3.—Deaths, cases, and indicated fatality rates per 100 cases by States, for the years 1912, 1913, and 1914, separately for typhoid fever, measles, scarlet fever, diphtheria, and their total.

State.	Typhoid fever.			Measles.			Scarlet fever.			Diphtheria.			Total.		
	Cases.	Deaths.	Fatality.	Cases.	Deaths.	Fatality.	Cases.	Deaths.	Fatality.	Cases.	Deaths.	Fatality.	Cases.	Deaths.	Fatality.
Alabama.....	1,303	565	43.36	.....	.....	.....	352	17	4.82	510	145	28.4	2,165	727	33.58
Arizona.....	.....	.....	.....	129	35	2.71	212	28	13.14	121	39	32.2	492	102	20.73
California.....	3,204	811	24.62	10,618	304	2.84	4,526	168	3.71	4,338	448	10.3	22,806	1,731	7.59
Connecticut.....	2,612	17,742	13.97	359	2.03	6.28	6,289	284	4.51	7,297	639	8.8	33,900	1,647	4.86
District of Columbia.....	1,386	180	12.98	33	.39	1.59	1,126	18	1.59	1,375	72	5.2	12,183	303	2.47
Hawaii.....	591	152	25.77	422	7	1.65	40	4	10.00	613	61	9.9	1,666	224	13.80
Idaho.....	176	44	25.00	822	6	.73	207	10	4.83	28	4	14.3	1,233	64	5.19
Illinois.....	13,004	2,206	16.96	23,687	409	1.72	34,602	2,118	6.12	33,915	3,742	11.0	105,208	8,475	8.05
Indiana.....	8,103	1,820	22.48	12,074	147	1.22	12,308	399	3.24	11,979	1,361	11.4	44,464	3,727	8.38
Iowa.....	.....	.....	.....	.....	.....	.....	2,830	192	7.78	2,945	438	14.8	5,775	630	10.90
Kansas.....	4,274	776	18.15	14,085	204	1.45	4,091	132	3.22	2,970	337	11.4	25,370	1,449	5.71
Louisiana.....	524	83	15.85	794	9	1.13	204	2	.98	1,794	114	6.4	3,316	208	6.27
Maryland.....	6,639	732	11.02	9,027	127	1.40	3,085	76	2.45	2,622	312	11.9	21,373	1,247	5.83
Massachusetts.....	4,486	548	12.21	50,549	785	1.55	13,693	429	3.13	12,168	1,097	9.1	80,896	2,856	3.56
Michigan.....	7,103	1,443	21.72	21,276	532	2.50	11,706	628	5.33	13,627	1,565	11.5	53,712	4,168	7.76
Mississippi.....	6,179	624	10.09	17,967	328	1.82	325	4	1.23	1,089	195	17.1	25,560	1,151	4.50
Minnesota.....	3,955	676	17.09	8,818	286	3.24	11,553	606	5.27	8,962	723	8.1	33,318	2,227	6.89
Montana.....	1,332	194	14.56	5,106	40	.77	2,103	128	6.08	540	57	10.6	9,171	419	4.57
Nevada.....	1,855	18	9.73	434	1	.23	134	3	2.24	12	1	8.3	765	23	3.00
New Jersey.....	4,854	805	16.58	.....	.....	.....	15,140	596	3.93	17,831	1,631	9.2	37,825	3,052	8.07
New York.....	18,099	2,980	16.46	178,252	2,941	1.64	54,586	2,295	4.20	60,792	5,454	7.3	311,729	13,670	4.38
Oklahoma.....	4,836	718	14.94	3,347	140	4.18	1,786	81	4.53	1,727	257	14.8	11,696	1,196	10.22
Oregon.....	9,909	214	23.54	4,795	67	1.39	1,642	53	3.22	913	91	10.0	8,259	425	5.14
Pennsylvania.....	6,343	1,310	20.65	34,715	845	2.43	8,445	552	6.53	12,364	2,042	16.3	61,867	4,749	7.68
Porto Rico.....	383	133	34.72	.....	.....	.....	.....	.....	.....	131	41	31.3	514	174	33.85
Rhode Island.....	405	58	14.32	816	60	7.35	1,082	42	3.88	990	106	10.7	3,293	266	8.07
South Dakota.....	285	56	19.68	2,954	30	1.01	3,902	31	3.43	437	32	7.2	4,578	153	3.34
Utah.....	2,940	212	7.20	15,966	146	.91	3,012	46	1.52	3,932	56	1.4	22,150	496	2.24
Vermont.....	512	113	22.07	3,491	29	.83	1,189	38	3.19	1,065	90	8.2	6,287	270	4.29
Virginia.....	14,222	1,453	10.21	.....	.....	.....	4,080	41	1.00	8,208	608	9.3	26,510	2,162	8.23
Washington.....	1,466	270	18.41	9,571	142	1.48	1,582	51	3.22	1,054	88	8.4	13,673	551	4.03
Wisconsin.....	2,297	634	28.31	15,380	288	1.87	9,225	640	6.93	6,967	847	12.2	33,818	2,409	7.12
Wyoming.....	121	38	31.40	540	13	2.41	229	17	7.42	66	13	19.7	556	81	8.47
Total.....	122,008	20,231	16.58	471,742	8,313	1.76	212,346	9,729	4.58	220,432	22,832	10.35	1,026,528	61,105	5.95